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CHEESE, BUTTER, BACON, FRUIT, FLOUR---PRODUCTION AND EXPORT

EVIDENCE

OF

PROF. JAMES W. ROBERTSON

COMMISSIONER OF AGRICULTURE AND DAIRYING

BEFORE THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

1899

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OTTAWA

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CHEESE, BUTTER, BACON, FRUIT, FLOUR---PRODUCTION AND EXPORT

COMMITTEE ROOM No. 46,
HOUSE OF COMMONS,
9th May, 1899.

The Select Standing Committee on Agriculture and Colonization met this day, at 10.45 a.m., Mr. Bain, Chairman, presiding.

Mr. JAMES W. ROBERTSON, Commissioner of Agriculture and Dairying, was present at the request of the Committee, and made the following statements:—

Mr. CHAIRMAN AND GENTLEMEN,—The outside markets for Canadian farm products is a very large subject for one morning; and as the special agent of the department, in Great Britain, is here I shall deal only with the general aspect of the main products in the British markets; and leave Mr. Grindley to speak of the details of packages and condition of products which he was able to examine while there.

CANADIAN CHEESE.

Our cheese trade in Great Britain is not in a very healthy state. The increasing wealth of the people there makes them much more fastidious in choosing their food. They have been for some twelve years continuously demanding a softer-bodied cheese. Such a cheese cured in a warm climate develops a heated and strong flavour to which the English consumer has a constant objection. While improving our cheese in richness of body we have not been able to retain, in a large quantity of summer-made cheese, the clean nutty flavour. Meanwhile the English and Scotch makers have been making their quality superior, by adopting systematic methods instead of the old rule-of-thumb practice. During last July we found English and Scotch cheddars quoted in active demand at about 60 shillings per 112 pounds in England, while Canadian cheese was difficult of sale at 42 shillings in the same market at the same time. Let me say that the manufacture of English and Scotch cheese is not a small thing. It is estimated that they make over there about one pound of cheese for every two pounds they import from all countries.

Flavour is due to the curing temperature mainly, cleanliness being observed. When cheese has been cured in this country continuously at a temperature under 65° Fahr., we have had a flavour like English cheddar; while similar cheese cured in a room where the temperature fluctuated over 75° Fahr. has been of inferior flavour. This has resulted in a difference in value of one and a half cents a pound when the two cheeses were compared in December. The remedy is to have the temperature of the curing rooms in Canada so regulated that the cheese can be cured at a temperature under 65 degrees. The average temperature in England in summer is from 61 to 62 degrees; and if they have a stone wall curing room they can maintain that temperature inside. We have issued special instructions to cheese factory owners and cheese makers on the methods by which curing rooms can be improved. At a slight expense they can be made so as to have a temperature of 65 degrees. It will then be possible to get a quality as good as they do in England. The department has made arrangements to handle the cheese from two factories one-half cured as usual and the other half in a room kept at 65° by insulation, and the use of a sub-earth air duct, supplemented by ice. I think the cold storage rooms in creameries for butter have accomplished a great deal for that industry; and I believe a great deal can be done by having cool curing rooms at cheese factories.

By the Chairman :

Q. Do you vary the making by that ?

A. You can vary it towards making the cheese softer when they can be cured at a low temperature. By curing cheese at a cool temperature there is quite one pound per cheese less loss in weight; and the saving in shrinking alone in one year is equal to one half the cost of the improvements required in a curing room.

By Mr. Featherston :

Q. Is the cheese made softer by less pressing ?

A. No, it is made softer by heating the curd to a rather lower temperature and stirring it somewhat less. That is a condition that is quite safe when cheese is cured at a lower temperature. In that way you get an increased weight and better quality for the English market.

A. The department has also been in correspondence and consultation with the owners of steamships and they promised this year to provide ventilated chambers on the ships for the carriage of cheese, not cold storage but simply ventilated chambers with fans to carry the warm air out and take fresh cool air in during the voyage. That will cause them to be landed in much better condition, cool and firm with bright dry surfaces.

By Mr. Stenson :

Q. What is the temperature in these chambers ?

A. The captain in charge said he thought they could have it down to 60° or 65° by having the exhaust fans run during the nights only in warm weather. Nearly all the cheese shipped from Montreal warehouses are cooled down to 50°. A large part of the cheese handled there go through cool rooms; and perhaps five-sixths of them are cooled down to 50 degrees.

Q. Does not that hurt the cheese ?

A. It retards curing. The cheese which suffer most from heat on the voyage are the through shipments which pass directly from the railway cars into the steamships.

By Mr. McMillan :

Q. Does not the same hold for apples and eggs ?

A. For eggs and for all except the early varieties of apples, cool ventilated storage is better than cold storage on the steamships. The early varieties have not been well carried except in cold storage. All winter apples, when they come out of cold storage into a warm moist atmosphere, deteriorate.

Q. They sweat ?

A. Yes; there is condensation on their surface. From ventilated chambers the fruit can be landed and marketed in better condition.

By Mr. Moore :

Q. What kind of arrangements do you make for keeping the temperature below 65 degrees ?

A. In a cheese factory the curing-room is insulated by being lined inside. I am speaking now of improving a building that is already up. It is lined inside all around walls, floor and ceiling with two thicknesses of paper to keep the warm air from the outside from getting inside. It is then sheathed inside with one thickness of lumber. That makes an excellent curing room that may be kept at the proper temperature with little difficulty.

Q. Do you put lumber close up to the air space ?

A. We use two thicknesses of paper and one of lumber which is quite sufficient to keep the air from the outside from coming through. Of course if you are erecting a new building I would prefer putting two thicknesses of lumber and 2 ply of paper

between them, both on the inside and the outside of the studs. That gives a good air space in the wall; and it is a construction that does not cost very much. The curing-room of the cheese factory should have double windows in the summer time.

An hon. Member :

Q. Do you use shutters also?

A. Certainly, shutters are also required; and double doors as well. These small things make a great deal of difference, when the temperature is 90° outside.

An hon. Member :

Q. How would you cool the atmosphere inside the room after it has become warm?

A. By constructing a subearth duct to be four feet in the ground and not less than 100 feet long, making it of tiles and giving about 100 inches square of opening for every 5,000 cubic feet contained in the curing-room. That is for a small curing-room occupying a space of say 20 ft. x 30 ft. The warmth inside the room will create a suction along this duct; and the air passing at a depth of four feet underground along the duct for a distance of 100 feet will become quite cool. I have cooled rooms very often down as much as 10 and 12 and sometimes even 15 degrees in this manner. The warm air is carried out by a ventilator from the ceiling. In ordinary cooling rooms the draught is so great that sometimes it is necessary to partly close the opening from the subearth duct into the room in order to keep the air from coming in too freely and consequently not cool enough. An ice rack is put along one side of the curing-room and ice blocks are placed upon it. The air circulates down over the ice and by this circulation you can keep the temperature down to 60 or 65 degrees even in exceedingly warm weather. In a cheese factory making fifty tons of cheese per year, 50 tons of ice would be an ample supply for the purpose of keeping the room at the temperature I have mentioned. It does not cost very much, as the ice can be put up almost anywhere in Ontario for 80 cents a ton or less.

By Mr. Stenson :

Q. Is it not necessary to have the ceiling as well as the walls covered with paper so as to prevent the hot air coming in from above?

A. Quite so, and the floor also should be lined. The latter is quite as important as the walls. The whole of the inside should be covered so as to prevent the passage of air from the outside into the inside except through the duct. Insulation is not needed to such an extent as in the butter store rooms because in the cheese factories the difference is as between 60 degrees and the outside temperature; and in the butter rooms the difference is as between 34 degrees and the outside temperature.

By Mr. Featherston :

Q. Is not there a danger of getting cheese mouldy by the damp air which comes through the duct?

A. There may be; but by using a small amount of formalin in a glass vessel, and allowing a cloth to hang over it as a wick, the formalin will evaporate into the atmosphere and keep everything free from mould. It has been also applied by spraying the surface of cheese in a cheese factory and has prevented the growth of mould on the surface of the cheese for a time. It has been applied very successfully to the killing of mould.

CANADIAN BUTTER.

Canadian butter is making headway in England, with one difficulty and drawback still to overcome. When the butter made in Canada is taken from the cold storage chambers on the ships or the warehouses in Great Britain and taken to the

retail shops it loses its flavour rather quickly. Moisture from the atmosphere condenses on its surface; and the butter becomes what they call in England "winded" which is a serious fault. The butter makers, as far as I can learn, in all other countries from which butter is sent to Britain, use some other preserving substance in the butter besides common salt. The English importers last year have been urging the use of a small quantity of some preserving material to keep the butter in good condition for four or five days in the retail shops, in order that it may please as well there as the Danish.

I made an experiment several years ago and found that butter did not lose its flavour so quickly when a small quantity of preservative was used. The preserving material used was 90 per cent borax (powdered) and 10 per cent of salt. One half of one per cent of that mixture in addition to the usual salt was sufficient to keep the butter.

Q. I was told it was excluded by law?

A. There have been a few cases before the courts in England, but there has not been a conviction sustained where anything less than one per cent was used.

It seems to be a recognized thing that one per cent is allowed without being regarded as adulteration; and the best authorities hold that it is entirely non-injurious.

The relative position that our butter has already taken with the Australian, is this: In 1895 the Australian butter, compared with Canadian creamery, ranged about from 9 shillings to 13 shillings per cwt. higher than ours. Of course butter fluctuates greatly according to the supply, but on the average the quotations that I can find for a year gave from 9 to 13 shillings per hundredweight difference in favour of the Australian butter.

By Mr. Featherston:

Q. That is the Australian butter?

A. Yes. In 1896 it was not so much; in 1897 from 2 shillings and six pence to about 7 shillings. In 1898, for part of the year, the Australian butter was from 3s. to 5s. lower than Canadian; and for a part of the year from 2s. to 4s. higher. On the whole last year Canadian creamery butter was a little higher than Australian, whereas in 1895, taking the average, Australian was from 9 to 13 shillings per 112 pounds higher than ours.

Q. What is the cause of the difference; are they shipping more favourably than we are?

A. They did then, because they had cold storage provided by the Government before we had. We have only been shipping in cold storage for four years.

By Mr. McMillan:

Q. Are the compartments in their vessels separated from each other or are they all kept at one heat?

A. Everything from Australia is frozen; nothing of ours is. The Australian practice is to keep the temperature at 20° or under, for beef, mutton and everything in cold storage. Ours are carried at from about 34 to 38 degrees.

By Mr. MacLaren:

Q. Our goods are chilled?

A. Chilled, not frozen. When butter is held for a long time it is brought down as low as 20 degrees.

Then comparing our butter with Danish, we have not come up to where they are; but on the whole we have gained on Danish from 1895 to 1898, about 6 or 8 shillings per cwt. We have not gained to the point where they are; but we have gained that much on them.

By Mr. Featherston:

Q. Owing to improved conditions?

A. Yes, owing to improved manufacture; and also owing to improved cold storage at the creameries. The butter is cooled the day it is made and therefore stays good. That is quite as important as cold storage on railways and steamships.

By Mr. McGregor :

Q. Is the Danish butter handled in cold storage ?

A. No, only cool storage; but it is only from 3 to 4 days on its way to the market.

By Mr. McNeill :

Q. What is the difference in price between Danish and ours ?

A. All the way from 4 to 9 shillings per hundredweight; and in one exceptional case higher than that. In 1895 the difference was in extremes from 14 shillings up to 22 shillings; but on the whole I do not think our average gain has been more than from 6 to 8 shilling per cwt. on creamery butter.

By Mr. MacLaren :

Q. Is it not largely because of the name Danish has got ?

A. A good deal. It is fashionable to eat it; and it does not go off in flavour quickly.

Q. On one occasion I was given some Danish butter and some Canadian butter to taste. I did not ask which was which, and as it happened I chose the Canadian butter. But for all that the Danish butter was selling at 4 shillings per cwt. more because it had the name.

A. Yes, and Canadian last year improved in the market also because it has so much better a name than it used to have; people are asking for it in the shops.

By Mr. McGregor :

Q. On the whole the market looks better than it has been ?

A. Yes.

By Mr. MacLaren :

Q. And also because it is called Canadian instead of American ?

A. There is something in that.

By Mr. McNeill :

Q. I have found the same thing in regard to cheese as Prof. Robertson did with butter? When I was last in the old country I saw English Cheddar cheese marked at one shilling a pound and Canadian at nine pence a pound. I took some of both home and had several people try them without letting them know which was which; and all declared that the Canadian cheese was the better, and still one was selling at nine pence and the other at a shilling.

By Mr. McMullen :

Q. Have you anything to say about the putting up of butter? A great deal depends on that. What have you to say about the best method ?

A. I think the package most suitable for the export trade is the Canadian box, rectangular, almost square, holding 56 pounds net, covered inside with paraffin and lined with parchment or butter paper. That is the package most preferred.

By Mr. Featherston :

Q. And the square loads best ?

A. Yes, they load better in the steamships; and turn out better on the counters of the shops.

By Mr. McMullen :

Q. Better than the round package?

A. Yes. There is a trade still in South Wales which requires tubs. We leave it to the merchants who are exporters to advise the creamery men what sort of packages they want.

By Mr. Featherstone :

Q. I suppose you recommend the centrifugal process with reference to creaming?

A. Yes. The cream is recovered more fully; and the skimmed milk is left in better condition for calves.

By Mr. Calvert :

Q. Have we shipped any butter in pound prints?

A. The export of pound packages has not been a success. So much surface of butter is exposed that the butter loses flavour quickly. The English dealer likes to get it in bulk; and then makes it up in pounds or smaller prints himself.

By Mr. McNeill :

Q. Is the use of boracic acid becoming general?

A. Not in Canada; but the English makers are using it in their own manufacture.

By Mr. McMullen :

Q. Are the square boxes put up with screws?

A. They have dovetailed corners which are also glued; and cost about 18 or 20 cents.

Q. Made of spruce?

A. Yes, they are made of spruce, and are about $\frac{5}{8}$ or $\frac{1}{2}$ inch thick, so they are quite light. We have a growing trade, to a limited extent, in butter and tins for the Yukon region; and we now have several customers in Japan to whom we send regularly monthly shipments from the Government creameries in the North-west. They say it is better than the butter they get from France. We also have a small trade with the West Indies.

By Mr. Featherston :

Q. What sized packages do they take?

A. Two pound, five pound and ten pound tin packages, chiefly two and five pounds.

Q. Shipped in crates?

A. In close boxes holding about 60 pounds to the box.

In order to have the difficulty of mould removed from the production of the current butter season, I had the following formula recently issued from the Department in the form of a circular for distribution to butter makers:—

“DOMINION OF CANADA,

“DEPARTMENT OF AGRICULTURE,

“Commissioner's Branch,

“OTTAWA, 22nd May, 1899.

“TO PREVENT MOULD ON BUTTER.

“The presence of mould on butter and on the paper and package is a source of injury to the butter. The appearance also is such as to lessen the value very greatly.

"Experiments have shown that formalin is a most excellent preventive of mould. All paper to be used for the lining of butter packages should be soaked in a strong solution of salt. Formalin may be added to that salt brine at the rate of 1 oz. of formalin to 3 gallons of brine. The paper should be left to soak for 24 hours. The same brine may be used continuously. It may be renewed by the addition of a little fresh brine and formalin every week.

"Formalin does not at all preserve the butter and should not be used for that purpose. It should be used in the brine on the paper only to prevent mould.

"The Butter and Cheese Association of Montreal has passed a resolution strongly disapproving of the use of green boxes, that is boxes made of unseasoned wood.

"The paper with which butter packages are lined should not be lighter than 45 lbs. per ream.

"(Signed) JAS. W. ROBERTSON,
"Commissioner."

CANADIAN BACON.

We find Canadian bacon taking very well in the British market, with the difficulty that at certain seasons of the year a percentage of our bacon is rated as being soft, and therefore fetches a relatively low price. There is also a quantity of the bacon rated as seconds; that means that the bacon is too fat, though of good quality otherwise. When in London last year I found from one of the largest handlers of bacon from Canada that in July the range was from 33 per cent to as high as 50 per cent of seconds in some shipments; and the seconds were fetching anywhere from 6 shillings to 8 shillings a hundredweight less than the firsts, that is from 1½ cents to 1¾ cents per pound less than the firsts. We are going to lose our nearly first position there unless we are able to send a larger percentage of firsts—that is bacon from hogs weighing from 180 to 220 pounds, rather thin in the back, fleshy and not soft. The soft bacon cannot be smoked to look nice on the other side, and is sold for a comparatively low price. It is flabby and does not look well. Experiments have been in progress since last autumn to get some definite light on the causes of soft bacon as far as the causes might be in the feeding and management of the hogs. I am not prepared to make a full statement in regard to that as yet. We have obtained some light through our work last winter, and I think are on the right lines of investigation; but until the experiments have been carried on further it would not be wise to draw definite conclusions. However, I may say this in passing that where one-half of the food in fattening the hogs has been Indian corn, the hogs have been classed as first quality.

By Mr. Clancy:

Q. In what stage of the feeding is that?

A. In the last ten weeks.

By Mr. McMillan:

Q. I have heard a man complaining that they have more soft bacon than ever before?

A. Yes.

I looked into the question in Essex last autumn. My way was to get the evidence of the men who are in the business. The practice in the western part of Ontario where a large proportion of soft bacon came from was to grow the young hogs in inclosures, feeding them mainly on Indian corn and finishing them off on pasture where they get plenty of clover. The inevitable outcome of that practice was soft bacon. On the other hand, where the growing hogs are reared in pastures and finished off on a ration of half corn there has not been soft bacon.

By Mr. Clancy :

Q. Does that arise from the corn or might not some other grains produce the same finish?

A. They might.

By Mr. McMillan :

Q. Suppose you finished off on all corn?

A. That makes the bacon very fat.

By Mr. Calvert :

Q. What other grain do they feed?

A. A mixture of barley, pease and oats.

Samples of soft bacon and firm bacon were obtained from a well-known packing house and transferred to Mr. Shutt, chemist at the Experimental Farm for examination and analyses. This was established by his investigations: That there is much less connective tissue in the fat parts of the hogs that are soft than in the hogs that are firm. Connective tissue is doubtless formed while the animals are growing; and if that structure is not formed while the hogs are getting their growth the probability is that the bacon will be soft.

By Mr. McMillan :

Q. Have you any experience of hogs fed on roots? Where we are living the increase of hogs is enormous and most farmers are feeding largely on mangels?

A. That would give the conditions for making firm bacon. For all these things fed to young growing hogs make for the robustness of life.

Q. There are three farms where they have been sending over every month one or two loads of hogs fed largely on mangels and the result has been very good.

By Mr. Clancy :

Q. It does not seem quite clear yet, whether soft bacon may be traced to corn or any other grain when the finishing in both cases would be clover?

A. No, that is not demonstrated. A point that is demonstrated is that insufficient nutrition while the animals are growing is apt to produce soft bacon.

Q. Why do they object to feeding corn in connection with whey all the time?

A. I do not know, except that corn and whey do not make a well balanced feed.

Q. The corn and whey make the bacon firm?

A. Yes; but too fat.

Mr. McMILLAN.—I have paid much attention to the growing of young hogs, and I let them run around; for my experience is that when allowed to run around they grow better. I have always fed the different varieties of grain, and I believe that it will be borne out that the corn makes the best bacon.

By Mr. Cargill :

Q. In order to get the information, whom do you consult, the hog producer or the hog curer?

A. I consulted both; and the opinion of the packers is that corn makes soft bacon. When I consulted farmers I found that when some corn was fed it made the bacon first class. They have an opinion in England which I think is founded on experience, that the want of connective tissue was caused by insufficient nutrition while the hogs are young.

By Mr. Stenson :

Q. Do you not feed them with clover first?

Mr. McMILLAN.—We fed them on clover and they did first class on it when they were young, when we took them in to make them up before selling them, we took them off the clover.

By an hon. Member :

Q. Do pease make more tissue than corn ?

A. Pease make an exceptionally firm bacon. A mixture of pease, oats and barley is very good.

Mr. GILMOUR.—Through Essex and those western counties last year was it a common practice that pigs reared around the farm yards on corn were then turned out and sold from the pastures ?

By Mr. Featherston :

Q. That was the time of the year that soft hogs came in ?

A. All the way up west they shipped fresh from the clover fields. That is the time we had most trouble with soft bacon in England.

By Mr. McNeill :

Q. If the farmers had not a large supply of skimmed milk to feed them, if they were obliged to feed whey, for example, whether would corn or pease be most likely to give the best results ?

A. Pease and whey make a better balanced food than corn and whey.

By Mr. McMillan :

Q. Do you mean that for fattening them for the market for a short time before you are selling ?

A. Pease, oats and barley are much better than corn to be fed with whey.

By Mr. Kaulbach :

Q. Is corn liable to cause hog cholera ?

A. No ; but speaking generally, I found that wherever there are such conditions that the young pigs are not vigorous and thrifty, those conditions cause any disease in the locality to be more rampant.

Hon. Mr. FISHER.—I believe that one of the chief things to be watched is that during the growth of the hog you must give flesh-forming food and not fattening food ; and it is very important that during the period of the hog's development you should give food that gives them connective tissue. If you once lay the foundation of good bodies, I am satisfied that your bacon is not likely to be soft. If, during the growing period of your hogs, you lay a foundation that is soft, you can never overcome that ; and from that you will not be able to market good firm bacon. But if you have the growth of the hog properly made, you can afterwards feed him whatever is necessary to fatten him up to the point when he is fit for the market, and you will have good firm meat.

By an hon. Member :

Q. Supposing you feed on clover ?

Hon. Mr. FISHER.—During the growing period clover is very good food. I don't think clover alone would do. You would have to give them some grain as well, when you are fattening them. I have known a good many hogs that were grown on clover and were afterwards fattened properly that gave good firm bacon. If you tried to finish them up on clover the experience is that the bacon would be soft.

By Mr. McNeill :

Q. It does not do merely to lay down the connective tissues you must take care that you do not feed afterwards something that would have a contrary effect?

A. Yes. I think you may spoil the hog afterwards even if the foundation is properly laid; but if you do not lay the foundation well I do not think you can ever remedy it.

By Mr. Semple :

Q. How does the price of Canadian bacon in England compare with that of bacon produced in other countries?

A. Last summer, and in this also you have fluctuations in the markets, there were small quantities of Canadian bacon selling about as high as the best Danish. A good deal of Canadian was selling at from 2 to 4 shillings per cwt. under the Danish; but all the way from 6 to 15 shillings above the United States bacon which was of a different character. Canadian bacon was not so high as the best Irish which is better than the Danish.

By Mr. Moore :

Q. Do you say that it would be possible to fatten hogs up to say 400 pounds and have the hams as fine as with the young hog of, say, 150 pounds. Will it make as saleable an article as the small ham?

A. I do not think it would be so tender or as good; and it would cost much more per pound to produce the heavy hog.

CANADIAN FLOUR.

The other matter I thought of bringing up this morning is Canadian flour and its place in the British market. We have a large export trade in flour. In 1893, up to 30th June, Canada exported flour to the value of \$5,425,760. It is no inconsiderable trade. Looking into the question in England so far as I was able in the limited time at my disposal, mainly in London, I found the bakers did not know Canadian flour as such in hardly any case, but where they did know it they spoke exceedingly highly of it as a good strong flour, good for mixing with other flours and giving good bread. The English bakers make up their sponge from seven or eight kinds of flour, so as to have a continuity of quality in case one brand should fail them in the market. Just before leaving Canada for England I got a sample of the best Hungarian flour, brought from Hungary by a gentleman in the milling business who was passing through there. This was examined by the best experts and they established that Canadian flour contained 10 per cent more of albuminoids (flesh-forming qualities) than the best Hungarian. I went to a prominent baker in London to see if there was any possibility of having a test made by using Canadian flour in one of the modern bakeries. The test was made, but not under government authority or auspices. It was done by the bakers themselves for their own information. This reliable firm of bakers furnished me with a report afterwards. One of their tests in using Canadian flour gave at the rate of 146 pounds of bread from 100 pounds of flour, and that of excellent quality. They got at the rate of 152 pounds of bread from the next test and 151 from a third. All of these were from our strong Canadian flour. The point is this, that there is no other flour going to England from any country, so far as I can learn, that makes as much bread per 100 pounds, or as good bread as Canadian flour.

By Mr. Featherston :

Q. That was from Manitoba wheat, of course?

A. Yes, and if the excellence of its quality were known in England generally among bakers it should increase our exports.

By Mr. Semple :

Q. Don't they import wheat into England more than flour?

A. Yes, the millers prefer that, but there is a large export trade from Canada in flour.

By Mr. Kaulbach :

Q. How did the quality of bread from Canadian flour compare with that made from American flour? Was that tested?

A. We did not test American flour against Canadian; but as far as there is any evidence, American flour from the North-western States is about the same as our Manitoba flour; the American flour from other quarters is like Hungarian, and has more starch and less gluten.

Q. That would naturally give a good deal less bread?

A. Yes, and of a less nutritious quality.

The following table shows the value of some of the produce of Canada, exported during the year ending 30th June, 1898:—

THE PRODUCE OF CANADA.

		Quantity.	Value.
			\$
Cattle.....	No.	213,010	8,723,292
Sheep.....	"	351,789	1,272,077
Hams.....	Lbs.	86,911,090	8,092,930
Butter.....	"	11,253,787	2,046,686
Cheese.....	"	196,703,323	17,572,763
Poultry and game.....			100,736
Eggs.....	Doz.	10,369,906	1,255,304
Wheat.....	Bush.	18,963,107	17,313,916
Flour.....	Brls.	1,249,438	5,425,760
Oats.....	Bush.	9,876,463	3,041,578
Oatmeal.....	Brls.	176,821	554,757
Pease.....	Bush.	3,236,131	1,813,792
Apples.....	Brls.	439,418	1,306,681

The following summary of the exports of all agricultural produce and of animals and their products from Canada, shows the values of those which were exported to the United Kingdom and the United States respectively in the three years 1896, 1897 and 1898:—

ANIMALS AND AGRICULTURAL PRODUCE (THE PRODUCE OF CANADA.)

Value: Year ending 30th June.	Exported to	
	The United Kingdom.	The United States.
	\$	\$
1896.....	40,694,222	6,173,875
1897.....	45,825,601	7,000,647
1898.....	66,227,923	5,054,853

The evidence I have gathered the last few years in looking at our foreign markets goes to prove that the United Kingdom is the market for the surplus of farm products of Canada.

MR. A. W. GRINDLEY.

Special agent of the Department of Agriculture in Great Britain during 1898, was called, and in response gave the following evidence before the Committee:—

MR. CHAIRMAN AND GENTLEMEN.—Prof. Robertson touched on the point of our apples in England being classed as almost from two different countries, that is the apples from Nova Scotia and Canada. Even a paper like the *London Times*, in speaking of the Christmas apple trade, says, "Because of the short quantity of choice English apples the imported samples, especially from California, Canada and Nova Scotia" have made good prices." That has been brought about by the barrels largely. In Nova Scotia they use a sawed stave barrel and split hoops, with very little bilge, almost straight staves, which holds from 100 to 120 pounds of fruit net. The so called Canadian barrel used in Ontario and Quebec has a smooth stave, flat hoop and considerable bilge and holds about 140 to 150 pounds net. The Ontario barrel is superior to the Nova Scotia one, which is very rough and unsightly, so it is not on account of the barrel that Nova Scotia apples sell better and rank better than the so called Canadian fruit.

About the way the fruit is graded (I am speaking more particularly of Covent Garden because the London market is more particular than the Liverpool, Bristol and Manchester markets, it is the most particular market in Great Britain) on the London market, California comes first, Nova Scotia second and the so called Canadian fruit takes third place. Now Californian fruit has only attained the high position it holds because California sends forward a uniformly good article.

By Mr. Bain :

Q. You are speaking only of apples now?

A. I am now confining myself to apples wholly.

The Californian Newton Pippin was retailed on the London market for a dollar a dozen. As far as the apple goes we have far better apples in Canada than the California Newton Pippin.

By Hon. Mr. Fisher :

Q. About what dates would that be?

A. It would run in for the Christmas fruit trade. It would be in the month of December last, the forepart of December.

Nova Scotia ranks ahead of Ontario and Quebec for the same reason although they do not rank as high as regards packing fruit, and are not as uniform as regards size as the Californian; they are away ahead of Ontario and Quebec, that is taking it as a whole. There are exceptional cases in Ontario and Quebec where they ship fine apples. Just to show what is being done, there is the case of Mr. Shepherd of Como, who is shipping over our Canadian snow apples "La Fameuse" packed in a box something like our egg cases. These apples never go on the general market at all. He sends direct to the Prince of Wales and the Army and Navy stores, London. If we send apples like that we can compete successfully with the California Newton Pippin, because although a pretty apple that looks well on the table, as regards flavour and eating quality, it is not in it with many Canadian apples.

TOO MANY VARIETIES AN INJURY.

Nova Scotia has got up a reputation for apples from the Annapolis Valley, the Ribston Pippin, and the Gravenstein. There cannot be a greater mistake than shipping too many varieties of apples. California has got a reputation worked

up on one variety. I am told they confine their shipments to about four varieties. Nova Scotia sends a considerably larger number than that, but when you come to Ontario and Quebec the number is much larger. Going down Covent Garden market one morning on one side of the market I jotted down the different varieties of Canadian apples. There were 40 different varieties from Ontario and Quebec alone. I have here a statement in reference to a shipment of apples that was sent from Bowmanville, Ontario. In a consignment of 69 barrels there are 16 different varieties. The English like a uniform article and when they send in repeat orders, they want to have these orders filled with the same varieties and about the same grades that they got in previous orders that gave satisfaction. It is a well known fact that as soon as other countries, Denmark and the United States, adopted creamery methods and we went on with dairy methods, our butter trade went from bad to worse, until we adopted the creamery system, and sent large quantities of a uniform article. California has got the market by sending large quantities of the same varieties, the Newton Pippins; Nova Scotia sends chiefly Gravensteins and Ribston Pippins, confining the trade to a few varieties. As for the so-called dishonest packing I do not know that the farmer is altogether to blame because having so many different varieties—and we have in Ontario some 80 standard varieties of apples; you go into the ordinary farmer's orchard, and if he has forty trees, 10 to 1 he has ten varieties in it. He has so many kinds that when he goes to pack his apples he has not enough of one variety to grade his apples properly but has to put in large and small apples in order to make up the shipment.

Another great objection to the Ontario and Quebec trade is that they have too many early varieties at a time when the market is glutted. In the fall of the year large numbers of early varieties are rushed on to the markets, the market is flooded. These apples have not good keeping qualities so that later on in the season there is really a scarcity of apples. You take our Canadian markets to-day and you will find they are selling apples out of cold storage down in the townships at 30 cents a dozen. Two important changes can be brought about. By top grafting, in good keeping varieties we can do away to a large extent with a large number of varieties, both in old orchards and new orchards, the difficulty has been brought about by apple tree agents to a great extent. The agent comes around with a book showing a lot of pretty cuts of apple trees and he says to the farmer, "here is a good apple", and the farmer takes a sample of each variety. Graft in varieties well adapted to the British markets, good keeping varieties, and then the farmer having a large majority of good keeping varieties, is better able to grade his fruit. I might say that this case that I have mentioned is not an exceptional one. I have gone down Covent Garden market noticing the Ontario and Quebec apples and you will often see just such instances as that, (Referring to the exhibit put in by Prof. Robertson) not in such a state of rot, because these have been exposed and handled for some time, but I have seen apples sent over there graded "A No. 1," in packages that had wormy and spotted apples in them.

PECULIARITIES OF MARKET TOWNS.

In Covent Garden market, the buyer, before making a bid on any Canadian fruit is bound to see a sample of the fruit, but I have seen samples of fruit from France and California where the brands and names on the packages are so well known and reliable that they are a guarantee of the quality of the fruit. You see such names as Block and Meek of California, and the buyers never think of opening their packages. The grades and marks outside are sufficient to let the buyers know what the contents of that box are, but you do not find them buying Canadian fruit that way. They will not take the marks of XX, or 4 X, as the case may be, on the outside of those parcels of Canadian fruit, but insist upon having a sample of it. Here is a sample and it is not an exceptional case. A man in Montreal made a very true remark when he said that the men who ship seem to want to spoil the reputation of the whole country, or something of that kind. You will see very inferior fruit at auction stall after auction stall on the Covent Garden market, and even worse in the

markets of Manchester, Bristol and Liverpool, for the reason that the London market is more particular about the quality of the goods than the other markets are. You see very little Nova Scotia fruits on the markets of Manchester, Bristol and Liverpool. London does not care about the size of the package, it is the quality that they are after. The other markets want large barrels, and Ontario and Quebec apples come to Liverpool, Manchester and Bristol markets because of the fact that they are packed in large barrels. I have seen barrel after barrel of Canadian apples on the Manchester market in which there were large quantities of small apples that were not better than this (indicating a small apple)—apples that farmers would look at twice before they would pick them up to feed in their pig pen. But they are learning their lesson. I know of a firm that bought a large quantity of apples in Montreal during the glut in the market, and they shipped them over to Bristol and sold them there and they lost a thousand pounds sterling on the shipment, and I was not surprised at it either, on account of the quality of the apples they shipped.

By Mr. McMillan :

Q. Supposing you top-grafted would you get enough fruit of good quality from the same stocks?

A. My own experience from top-grafting is that you will get good fruit and true to kind, and I prefer top-grafting to root-grafting for the reason that I think we get much better results. I have tried top-grafting into old seedling orchards where the trees bore apples which were perfectly worthless, common seedlings.

But the nature of the trees was very hardy, and by top-grafting the trees pruning and cultivating the orchards, we have succeeded in getting good apples. We have any quantity of such old orchards in Canada which by cultivating and top-grafting may be made into good orchards which will produce profitable crops of apples in a shorter time than by planting new orchards.

By Mr. Featherston :

Q. Is it not a very great drawback for the Canadian apples that the sellers have to show samples of each variety before the buyers will purchase them. Will there not be loss as a result?

A. Yes. When the barrels are opened and the fruit turned out there is more or less damage done to them, and they bring inferior prices in consequence. They are sold as samples then. Time and again in Bristol, I have seen just one or two barrels of a variety and of course the buyer wants to see a sample of each variety and that is the drawback, but when you get on the London market with the Nova Scotia fruit you see thousands of barrels of Gravensteins and Ribston Pippins and California Newtown Pippins in cases, but when you strike into a lot of barrels of Canadian apples you may begin to look for all sorts and sizes. There is no uniformity about them, and that is what the English market calls for, uniformity in the size and quality. There is a sort of feeling amongst the English people that they are willing to give a fair chance as far as possible to the colonies and to colonial fruit. There is a feeling that all things being equal they prefer Canadian or Colonial over the foreign article, and colonial fruit of all kinds would get the preference.

NOVA SCOTIA APPLES.

Unless we have a radical change in the methods of packing and shipping apples the Canadian fruit is going to take a back seat. The Nova Scotian apple has the preference, because there are men down there whose names and brand are so well known on the Covent Garden market to-day that they are accepted by the buyers and I know of men that have the reputation of being first-class men in Canada, who have had packed bad fruit, spotted and wormy, and put them into boxes as first-class fruit. It may have been the best quality that he had, but we must have some sort

of standard to grade our fruit by, either by size or by quality, because if you come to put what is called an A No. 1 Canadian, beside an A No. 1 California, they are found to be different articles altogether. We have a grade for Canadian wheat, and we must have a standard for our apples and grade them up to it, and ship only apples up to the standard. I will say just a word in regard to packages. Unless you have some very choice dessert apples it pays better to ship in barrels, the expense and freight is too great to send it forward in small boxes. We have, but we have not been using it very much, a box the inside measurements of which are 22 by 11½ by 10 inches deep. They hold about 50 pounds of fruit, but there is a box that Mr. Sheppard is using which is very fine for export, it is being made in Canada now, that is a box with cardboard partitions, it is supposed to hold about a bushel and a quarter. The spaces are made in different sizes so that you can grade your fruit, and choice apples are being sent over in very fine shape that way. It is rather expensive because the packages cost about 40 cents each.

PACKING AND TRANSPORT OF PERISHABLE PRODUCTS.

Now within the last few years it has been advocated to use the ventilated barrel. I have spoken to a number of men on Covent Garden and they do not approve of it. There are several faults which are found with it. Suppose you pile them up six or seven deep. These ventilated barrels are liable to get bent down, and as apples won't give like oranges they get crushed down and bruised. Another thing is this: take apples which arrive in a hot dry time and they are liable to become shrivelled, and if they are landed during cold weather they are liable to be injured by frost or even by sudden changes of temperature. That brings me to another point where we are wrong in all fruit shipments, and that is the packing of the fruit while it is warm. If you go to California you find that the fruit is all cooled down before packing. The idea of the ventilated barrel was that when the apples were packed up within a few days and put in cold storage the apples would cool down, which was perfectly correct, but the point seems to have been lost sight of that when they were taken out of cold storage the heat would get through into the apples as readily. Take the moving from the cold storage warehouses or cars to the ships in Montreal. The apples are exposed to great heat for a short time. Then they are cooled to a temperature of 36 degrees, and all these sudden fluctuations act in an injurious manner on the tissues of the fruit. It is just the same as if you take meat and freeze it and then rapidly thaw it; you are going to injure it. Take it in our soft-skinned fruits such as plums and tomatoes, which are taken out of cold storage with nothing more covering them than tissue papers, and expose them to a temperature of 60 or 70 degrees, and in a day or two they will melt away. The tissues are ruptured, and it works just the same using ventilated barrels. So the idea would be to cool the fruit before it is packed.

By Mr. Featherston:

Q. And pack in tight barrels?

A. Yes, pack in tight barrels.

By Mr. McMillan:

Q. And then it should go across in ventilated compartments?

A. Yes; I will touch on that point in a little while. Up to within the last few years we shipped in ordinary holds, and as the apples were with other perishable things without any ventilation, heat was generated from the mass of perishable food products and it spoiled the apples. Then we went to the other extreme and adopted cold storage and put the fruit in there. That acted better than the other plan, but still the sudden changes from a temperature of 35 or 38 degrees to a hot moist atmosphere, as in England, caused the moisture to condense on the outside of the fruit when the barrels were opened, and you had everything suitable to start up rapid rotting. Last year some apples taken from cold storage when opened up

appeared to be in magnificent condition. In 48 hours they had settled down 6 inches in the barrel and in a week I think it would have been impossible to find a sound apple. These were a soft variety of apple and they went like wild fire. We see the same thing here. If you take apples out of cold storage and put them in a warm atmosphere they will very soon show signs of decay. I was talking to a man in the city of Sherbrooke last week and I saw that he was asking 30 cents a dozen for apples. I asked him how they came to be so dear and he said "when you don't get more than a bushel of good ones in a barrel you must sell them at a high price." I saw grapes which were taken out of cold storage for the Easter trade and which came out nice, but in a couple of days if you were to take them up by the stem they would all fall off. The Grimsby people pinned great faith on cold storage, but the way of it was that they sent the fruit down to Toronto, there it was taken out of cold storage when wanted and eaten immediately and was all right. But let them try it out here with the same conditions they have in England—taking the fruit out of a temperature of 35 or 38 degrees and putting it into the store show window where the sun is blazing on it all day—and see how long it will last.

Now, as Prof. Robertson says, the steamers are going to have ventilated holds. I think that will be the most satisfactory system we have adopted yet, that is, to have a system of fans to work during the day, but if the weather is very warm to work only during the night, to pump the warm air out of the holds and replace it by cool air. By adopting that method, and by picking, grading and packing the fruit properly, and sending only a few varieties it will have a tendency to bring about a better state of affairs.

Q. Might it not be well to stop the fans two or three days before arrival on the other side and so bring the fruit to something like the temperature of England?

A. Approaching England the fans would be pumping in the air in which the fruit would land. There is no cold storage about it.

Q. I had a letter from a gentleman who ships fruit and eggs and he found that they had to stop the fans a couple of days before they got to the other side, so that when the fruit and eggs got there they were at the same temperature as the atmosphere?

A. But it is not cold air that is in the holds; it is a system of ventilation. I understand what you mean by your question. They have found that taking eggs out of the cold storage the moisture condenses on the outside, and now they are printing on cases of eggs that they are not to be opened until two days after they are removed from cold storage.

By the Chairman:

Q. Do they not do that with all cold storage products; bring them out gradually?

A. No. It is done with meat to a large extent by some of the best cold storage buildings in London, which have what they call defrosting compartments, which are used where meat is frozen solid—it is found that it takes four days to freeze a quarter of beef—it is defrosted by the use of dry air and gradual raising of the temperature. There is a system of steam pipes along the floor and pipes from the ammonia plant overhead. The temperature is gradually raised from 24 or 28 degrees to a temperature of 53 degrees. As the frost comes out it is carried up and is frozen on to the cold air pipes overhead, so that at the end of four days the frost has gathered all around these pipes and the meat is as fresh and bright as if it was killed the night before. That is a patent process, patented, I believe, by Sir Hugh Montague Nelson.

Q. That is not used for eggs?

A. No, the only thing that has come to my notice is that some shippers are pasting notices on boxes of eggs that they are not to be opened for two days after they have left the cold storage warehouses.

By Mr. McMillan:

Q. In the case of some eggs which were shipped last summer in cold ventilated compartments they stopped working the fans for one or two days before landing and

the eggs landed in the best condition. Mr. D. D. Wilson went to Montreal and got a compartment to suit himself in one of the Allan line steamers. I had a letter from him stating that it was a success, and he has been shipping eggs ever since the beginning of the trade in Canada.

A. Well, speaking about eggs there is one point I might speak of although it is not a question that is before us to-day. The cause of a great many of the eggs getting a peculiar nasty flavour, a musty flavour, has been brought about by the cardboard fillings. These are sent out from the mills in a green condition. They are made from pulp and a moldy growth starts on them, so they tell me in Montreal, these papers should be dried for a year at least or kiln dried, but that one little point of using green fillings has, in a great many instances been to blame when the blame has been put on the cold storage in the vessels.

Prof. Robertson I believe touched on the fruit market in the West. Year before last when I was out in British Columbia fully four-fifths of the fruit in British Columbia and as far east as Winnipeg was American fruit. Now there are two reasons perhaps for that. First the excessive freight rates, for fruit shipped from the East, but another reason is, that Ontario and Quebec people do not ship an honest article compared with the California fruit. You see the California fruit on your markets here in Ontario, and in Ottawa and it is graded strictly.

From what Prof. Robertson said of those apples sent out to Calgary it is very little use our trying to work up a market against the United States, in that section of country, until we send them a well graded article of fruit. There we have a market when we can ship satisfactory fruit from Ontario. Ontario can ship fruit as far as Calgary. There is a small section around Vernon where Lord Aberdeen has his fruit farm where fruit can be grown successfully but there is not any reason why Ontario should not hold the market as far as Calgary at least. But they have got to change their methods of shipping fruit for that market just the same as for the English market. With regard to inspection I quite agree that there ought to be some system of inspection but it is a very difficult thing to arrange. In California and in the Mediterranean fruit districts they have large quantities of fruit which are handled by the same company or the same individual. They get such large quantities, that, having a reputation to build up they do their own grading. In Nova Scotia there are people who handle large quantities of fruit and send packers out, and the same thing is done to a small extent I believe in Ontario and Quebec, men buy orchards of fruit, paying so much for the fruit on the tree, so the farmer may pick the apples and leave them in piles and the packer comes in and grades and packs the fruit. Take a section like Grimsby or the Niagara fruit section, they might have fruit houses there the same as they have in some of the Mediterranean sections where fruit is sent in large quantities, and then have it packed there under the supervision of an inspector. But I think it would be almost unnecessary to have an inspector if we had the same system of packing that they have in California or the Mediterranean, because there men have a reputation to establish and they are going to do the thing honestly just for the sake of their reputation. But so far as inspecting fruit, say at Montreal is concerned, it would never be a success. If a man say, consigns 500 barrels and he didn't have more than two varieties you might have some system by an inspector taking out a barrel here and there and examining it. But when you have 60 barrels of apples and 60 varieties you cannot expect that, because it means taking out the apples right there and seeing if the barrels are honestly filled. The only way I can see is to adopt something of the same method they have in California and the Mediterranean. That is let our large fruit men in each section organize together and establish a packing warehouse where they can put their fruit in, have it cooled down, do their grading there and even have the government officer inspect it and put a stamp upon it, as they do in Australia. In the London market you see rabbits coming in with lead seals on the crates put there by the government inspector. The Australia won't allow any rabbits to be sent unless they are fat and of good size. Wine, one over there from Australia with the government certificate and so with lots and lots of things. Canned goods all come under a system of inspection.

By the Chairman:

Q. Do they ship many apples?

A. No, they do not. In fact, I am told there is no reason why Canada should not look towards Australia for a market. They have a good market there.

By the Honorable Mr. Fisher:

Q. Do they not get some apples from Tasmania?

A. Lots of apples come from Tasmania.

By Mr. Hughes:

Q. Is there not a market in Tasmania for Canadian apples in the off season?

A. Yes, in the off season there would be, for their season is not our season and we might extend what we are already doing to a small extent. That is a system of branding "Canada" or "Canadian" on our products. We are doing that on our cheese and bacon. I will give you an idea how that works.

I went into a store in Bath where I saw a notice in the window, "Mild cured Canadian bacon." I went in and asked the clerk if that bacon came from Ontario. He said it did. I then asked him what town in Ontario it came from. He said: "I do not know. I will ask the master." He went into the back shop and came back and said it came from Chicago. I said "Chicago! Why, that's not in Ontario," and he said: "Oh, yes, it is." That was all I wanted to know. We have established a name for mild cured Canadian bacon on the British markets. Chicago as a general thing has very salt meat. The Englishman has a prejudice against salt in a great many things. This firm had got hold of Chicago bacon and there was not a demand for it, but there was a demand for mild cured Canadian bacon and he was selling it as Canadian. If we had "Canada" on our food products things like this could not occur. The Canadian if he is any kind of a Canadian at all is not going to brand Canadian on a thing he would be ashamed of.

But there are just a few other points I would like to refer to, where the Government, I think, can do some good practical work for the farmers. That is in giving them practical instructions as to the pruning, grafting, spraying, picking and packing. The Government has talked about establishing illustration stations for the growing of grains and different kinds of farm crops. But I think if they would send expert men into every fruit section and have notice given, public notice posted up that the man is to be there on a certain day for the purpose of giving the farmers instruction by practical illustration, the farmers would come in from that vicinity and he could give them lessons upon these subjects, at the proper season of the year for the various work to be done. Take grafting for instance, which is a very simple thing and can be learned by any one, and a great many farmers would soon be able to pick it up so that they could do their own grafting, and they would do it better probably than it is done by some of the professional men who go around. Then take the subject of spraying. Just before the proper time for doing this work they could go around and show them how it can best be done, teach them the preparation of the mixture. I believe that has been done already.

Then there is picking and packing. I believe that experts could give the farmers a few practical lessons in that department. There was another point brought before my notice in the state of Vermont and I think it would be a good way for the Government to reach the farmers.

The practice at the experimental station of Burlington, Vermont, to which I have alluded, was a very simple and a very effective one and dealt with the question of spraying of potatoes for the rot. They issue a card with a cut upon it of a potato patch on the top, one-half of the potato patch had been sprayed with the Bordeaux mixture and the other half had been left unsprayed, and the cut showed very clearly in the appearance of the two halves of the crop, the benefits and the advantages to be derived from spraying. Not only was there this picture but there was also underneath a

receipt of how to prepare the mixture and under that a description of how and when it should be applied. These cards were sent around to every post office a few weeks before the necessity would arise for spraying the potatoes. Now the post office is a place where every farmer will go three or four times a week and he sees it hung up there about the time that his potatoes get touched, and he has been looking at it and has learned the advantage of spraying before the necessity arises for using the mixture and when he needs it he knows just what to do.

They had a law for preventing the catching of trout under a certain size, and they issued a card giving a cut of the exact size of fish which was the smallest size allowed to catch, also giving information as to the fine which any person is liable to for taking a fish smaller than the size shown. There was the object lesson before every one, the same as in the case of the potato patch and the benefit of spraying. Now in Canada if we make any change in our mail regulations each postmaster is furnished with a card setting forth the changes, and it is hung up in the post office and every body knows of it immediately. Let the Department of Agriculture have a card printed giving information regarding the bulletins that are issued and the nature of the subjects treated in them and where they are to be obtained so that any farmer who wants to get any information upon any particular subject can see where to write to in order to get the bulletin or report upon the subject in which he is interested. These cards can be posted in the post offices throughout the country, and then nobody will be to blame if every farmer does not get the information which he requires and which will be of assistance to him. There might also be some cards such as I have described upon the spraying of fruit trees and other similar subjects. In some cases it would be a good thing to have cuts of apple trees showing one-half the tree that has been sprayed and the other half that has not, and there might also be cuts showing the apples graded the same as I have described as an object lesson to the farmers, as they should be when they are sent to the English market. Put these cuts upon cards and send them around to different post offices in the country sections, and by that means you can convey a great deal of valuable information to the farmers and keep the question of grading and packing properly before their eyes continually, especially at the season when it is necessary for them to bear it in mind in packing their fruit for the market and shipment.

The season is here now when the apple trees ought to be sprayed. The farmer sees the caterpillars and he knows that there ought to be some spraying done, but he says to himself I don't know where to get the information or what department to write to at Ottawa to get the bulletin giving me the information what to do and how to do it. But if these cards were posted up in all the post offices containing the information "spray your trees on such and such a date and mix up your preparation for spraying in this way" he is going to put into practice the knowledge that is contained in the information.

Mr. McMILLAN.—There is just this in Ontario, there are few farmers who go to the post office once a week. It is generally the children who go to the post office and brings the letters home. I would just say that the bulletins of the Ontario Government go to every one that is a member of the farmers institutes and has his name recorded on the list.

Mr. HUGHES.—I would like to ask for an explanation as to how to pack the apples. When in the old country I found the greatest complaint was the way they packed apples in Canada. I was not in at the earlier portion of the meeting so I do not know whether that question has been discussed.

The CHAIRMAN.—We have been looking very closely into that matter, here is an example of graded selected apples from Ontario that were taken out of the Castilian.

Mr. GRINDLEY.—Mr. Chairman and gentlemen, I will just run over some general conclusions which I have arrived at on points for the Canadian apple shippers to watch.

HOW TO SECURE PROFITABLE SALES.

The first point is quality which includes (a) soundness, we do not want soft dry mealy apples but crisp juicy fruit, the English people do not like soft dry mealy apples. Quality also includes (b) keeping qualities (c) appearance, that includes size, shape and colour and (d) flavour.

Ship only good reliable fruit of well known varieties.

Quality is of more importance than quantity.

Quality commands the market.

Quantity drags the market.

The next point is as regards packing.

Pack honestly.

Grade fruit according to size and colour.

Pack tightly.

Pack very choice table varieties in boxes holding about half a barrel.

A nearly straight staved barrel is best, as barrels with a large bilge are flattened when piled five or six deep, while straight staved barrels rest evenly on the hooks.

Don't brand the growers' name on barrels, as barrels are used the second time, but print the name and address on the felt paper circle which is placed at the top and bottom of the barrel. I may say with regard to that circle that it was a matter which was brought up by one of the largest Covent Garden merchants, in writing to a Nova Scotia shipper, that is taking ordinary felt building paper and making a circle to go in at the top and the bottom of the barrel, with finger holes in it at each side so as to get the fingers in to take it out and thus prevent tearing. The object of that is to stop the bruising of the fruit at either end and stop the moisture; and when you open the barrel and that felt paper is seen to be dry it is a guarantee that the contents are dry, while if that felt paper is wet you look for trouble right away. Another advantage of that felt paper circle is, that by stamping your name and address on it you get a reputation for your fruit. If you stamp the name on the barrel perhaps your reputation is going to be hurt by some one else using the same barrel and packing poor fruit in it. But if you stamp on the felt paper circles your name or brand, they will become the means of advertising your fruit.

Brand on the barrel or box the variety, grade, net weight of fruit, or number of fruit, and the private mark of the exporter.

The British markets call for a crisp juicy apple, so do not ship soft and mealy varieties.

If the fruit shipped in large packages and of choice quality is partially damaged, it often repays to pack the best in smaller cases, especially in the London market, which is more particular regarding quality than other markets.

Do not force apples out of season on the British market; for example do not force winter varieties on the markets when the demand is for early varieties. The British merchants do not buy in large quantities to hold in storage.

The British markets prefer the coloured fruit. Use only new boxes or barrels for export trade. Do not leave apples on the tree too long, but pick them when the apple begins to get its color. Do not pile fruit in orchards but cool it and pack as soon as possible. I might say that is a matter that has done great injury, this practice of piling the fruit and leaving it in piles in the orchard till the men come along to pack it. It takes all the nice crispness out and it never comes back again. A lot of these mealy, mealy apples come from their being put in a pile and leaving them there a day or two before packing them.

By Mr. McGregor:

Q. The horticulturist says that growers may pile them for a week or two to sweat, which is the contrary to what you say, so it is just a controversy.

A. That is a point which has been brought before me by Montreal shippers and people over there, who claim that the softness of many of the apples is brought about by leaving them on the ground; that the right method is to pick the fruit and place on trays or shelves in cellars or fruit houses and leave it there to cool. It is also improper to pick the fruit from the trees and pack it in barrels and leave them there. You have to go between the two extremes.

Mr. McMILLAN.—I believe the right way is to bring in the apples and let them stand in the barn some time before packing them.

Mr. GRINDLEY.—Do not ship apples with too long stems; the stems should be cut off to prevent them injuring the other fruit; but do not pull them off for that will cause the apple to rot. You will see the stem causing a nasty mark when the apples get crushed together in the barrel, so you should cut them off with shears or something of that kind.

Fruit growers with old orchards should observe the following points: Prune if required, graft with standard varieties for which there is a good demand, fertilize, spray, and give plenty of room to your fruit so that the sun can get in. Gentlemen, this is all I have to say this morning regarding apples.

By Mr. McLaren :

Q. What grades of apples do you recommend?

A. For apples to grow? I have here a list of the varieties that have been given both by Nova Scotia and Montreal dealers, and apples that have an established reputation. The apples for Southern Ontario for general markets are Kings, Gravensteins, Cranberry Pippin, Roxbury and American Golden Russett, Northern Spy, Baldwin, Greening. Now there is quite an assortment, ten in all, but if a farmer finds that any particular variety is well adapted to his district then keep to one or two, and you get good fruit. Orchards near cities can grow Red Astrachan and Duchess of Oldenburg. The apples for Quebec and Ontario general markets are the Wealthy, Fameuse, McIntosh Red, Winter St. Lawrence, Canada Baldwin, Canada Red, Golden Russett, Ben Davis, Greenings, Seek no Further, Kings and Cranberry Pippins. These first four, if they are very choice, can be shipped in boxes for table use.

By Mr. McGregor :

Q. Is the Ben Davis good?

A. The Ben Davis I have sometimes seen good.

Q. It is a good apple?

A. A good apple.

By Mr. Featherston :

Q. A good shipper?

A. Yes.

Apples for New Brunswick, Nova Scotia and Prince Edward Island are Ribston Pippins, Gravensteins, Kings, King Tomkins, Northern Spy, Greenings, Russets, Blenheims, Non Pareils. Of course there are other varieties, but what I want to impress upon the farmers is to confine themselves to very few varieties.

By Mr. McMillan :

Q. In keeping apples do you prefer a dry or a damp place?

A. I should not have it either way to a large extent. I should not want it too dry to shrivel the apples or too damp to spoil them. What you call an ordinary cellar or root cellar is a good place. You want a certain amount of moisture but not too wet.

Q. We have two cellars, one dry and the other moist. The apples we put in the moist cellar did much better than those in the other one. Let me cite one experience of a former member of this Board, Mr. J. H. Smith, of New Brunswick, who had

70 barrels of apples in a damp cellar; it came on a large flood and his barrels were half way up and some of them over their heads in the water. He thought they were destroyed, but when the water went away he found that those were the best apples he had. The barrels were not tight and all the water left them.

A. That was a curious experience.

By Mr. Cargill:

Q. What is the best mode of cultivating an orchard to get it in a proper state to make the trees most productive?

A. In some sections they set out the trees 33 to 35 feet apart; then you have the chance to cultivate the ground around them, and when they are full grown there is not much distance between their tops. In some orchards you find trees set 18 feet apart and when they reach their full growth the limbs become interlocked, and so the fruit does not ripen properly. With plenty of room as we have in Canada we should set them far apart and then they get a chance to spread out.

The Hon. SYDNEY FISHER, M.P., Minister of Agriculture, addressed the Committee, as follows:—

I think the matter we ought to consider most in connection with this information is the relation with the foreign markets. It is not so much a question of how to grow apples which is a separate subject of itself, the question is how to deal with the apples in business,—the commerce of them—and there are certainly several points which are most important. I may say for the last year I have had so many complaints sent to me as Minister, from all parts of this country and from the English market itself, that I felt it was a matter of the very utmost importance to investigate and get at the facts and lay these facts before the country. Last year there was some exception taken by members of the Committee as to statements of the way in which the apples were packed. It was stated that it would injure our trade and it was said that if these statements went abroad and were circulated through the press, it would create a bad impression. I am satisfied that view was entirely wrong, and it was better to recognize the facts and where there is a difficulty to try to remedy it and not shut our eyes to it. The condition of affairs in the traffic in our apples in the last season has been so disastrous to the apple trade in Canada that it is best for us to recognize it and try to remedy it. The stories of Mr. Grindley and Prof. Robertson are in no way exaggerated. During this last season especially, partly because our apples were grown badly through the season being a bad season, we have had sent forward to England apples that have disgraced this country. Hundreds and thousands of barrels have been sent there dishonestly packed, and this system of work has got to stop or our Canadian apple trade will be ruined, and it is no use blinking the facts or shutting our eyes. The English buyer and public know it and they won't buy our apples unless we send an honest article.

By Mr. McMillan:

Q. If we had an inspector, would that improve it?

A. That subject has been brought to my attention, and demands have been made that we should have an inspector at Montreal and the other points of export. I confess that I see so insurmountable difficulties that I shrink from attempting it. There is only one way to inspect barrels of apples, and that is to turn them out. If you turn them out you cannot get them back into the barrel again, and loss occurs. It would be an interminable job when you think that in the fall of the year 300,000 barrels are shipped from Montreal, and sometimes half a million barrels have gone out. You can realize what it means when you think that all these would have to be inspected within eight weeks, and what a job it would be. I have during the last fall, when I was in England, interviewed the ship owners in

regard to ventilated chambers for apples. We found we could do nothing with the agents of the companies in Canada, so we interviewed owners of the Elder-Dempster, Thompson, Dominion and one or two other lines in England, and urged them to take the necessary precautions to ventilate the holds properly, not only for apples but for cheese, by putting in ventilating fans which would exhaust the warm air. They promised this, and in some instances in some ships this was done last fall, and I am satisfied that the change was in the interests of the trade. This will remedy that evil to a very considerable extent. I may say this judging from several shipments sent from Nova Scotia of which we know in ships so ventilated, and which reached England in far better condition than any shipments had ever done before, and I am satisfied a great deal of difficulty can be prevented in that way. If Parliament grants me the funds asked for this coming season, I propose to see that we have an officer of the department in Montreal, St. John and Halifax especially charged with the shipping and loading of our apples, and seeing that they go forward in good shape. I think the magnitude of the trade will justify this expenditure, and I think it will be done and will accomplish a great deal of good.

The next difficulty is a much greater one, and that is the difficulty regarding the quality of the fruit itself. Our people have got this in their own hands. If our people choose to grow good fruit and put only the best quality in one barrel and the second best in another, and reject the third best they can establish a reputation in a very short time. A gentleman in Nova Scotia has shipped in the last three years 500 barrels of apples and out of all these he has received complaints of only one slack barrel, and the average net profits over all expenses for his apples have been \$3.50 a barrel over all expenses, commission, freight, etc., and only one barrel was reported as slack. That is a case where a man had taken pains to sort and pick carefully with result of having fine profit. The other apples which he rejected he sold locally either for cider or for the local market. Some people will say that he did not get as much as if he had sold all his apples, about 700 barrels, for the export trade and got a less price. I do not believe that and I know as a matter of fact men who are doing that do not net as large a profit as he did. The question of Government inspection and grading of the apples at the port of shipment has been discussed. I confess I do not see the possibility of doing it on any satisfactory basis. I would be glad if it could be pointed out how to do it in a satisfactory way, but so far I do not see my way to manage it. There are differences of quality in different seasons, in some seasons there is a large number of good quality, and other seasons we do not have so much. Different varieties would have to be inspected. If in every shipment there were only barrels of one variety a certain number would have to be opened. But with a variety of apples every barrel would have to be opened. The question of Government inspectors is a very difficult one to deal with. Have I any right to say to a man who wants to ship something "you shall not do it." I do not think that the Government or the Parliament has any right to do that. During the time two years ago that there was a discussion on the Act introduced to amend the General Inspection Act I received shoals of letters from all parts of the country, from everybody engaged in the trade, pointing out difficulties in the way of such legislation as this, and I confess I was frightened from undertaking it.

By Mr. Featherston :

Q. In 1892 or 1893 you established a standard apple barrel and according to the experience which we have had here to-day, that barrel is not what is required for the trade.

A. It is a barrel which the trade does not like to use and the Nova Scotia part of the trade have refused and do not use it. I went down there this winter and met the fruit growers there and several of their associations in the Annapolis valley, and they simply said they would not have anything to do with the standard barrel but they asked that we should change the law and make their barrels the standard.

By Mr. McGregor :

Q. Is their barrel a larger barrel than ours ?

A. No it is smaller and it is a straight barrel with very little bilge, but our reports indicate that this year the Nova Scotia apples have been infinitely better carried and graded than the western apples. You take a barrel with a bilge to it and lay it on its side and put two or three other barrels on top of it, and the pressure of the weight of the other barrels elongates it so that there is a space at each end and perhaps that is the reason for the fruit becoming damaged. But the difficulties in the way of Government inspection seem to me to be insurmountable and I would rather try and bring the effects of the present system before the people, and get them to realize how great profits can be realized by the men who really do succeed in properly packing their fruit to meet the requirements of the English markets. It has been suggested that we will have to have the business done in this country in a different way; that the apples should be shipped by large packers, who would buy them in the orchards and take them in and pack them, and I have no doubt whatever that if a system of that kind were established it would have been in the end better for all concerned, but in this country we have amongst the farmers a very strong prejudice against the middleman and these buyers and packers would be laid open to the charge of making too much profit out of it, and a large number of the farmers would not consent to sell their apples in that way. I think myself that the business in other trades is trending in that direction. Take for example we have the bacon and pork trade established in this country on that basis. It has been done by large packing houses who by doing their business in a careful systematic manner have succeeded in establishing the reputation of our bacon and hams in the European markets, and it is doubtful whether that reputation could have been established in any other way. So with our butter and cheese trade. It was only when butter and cheese were made in the factories in a large way that the reputation of these products was established abroad. I am inclined to think that anything almost that we export will have to be handled in a large way so that the reputation for the excellence and uniformity of our exports may be maintained and established and probably the apple trade would be benefited by such an agreement. But in the meantime there is no such arrangement perfected.

In the Annapolis Valley probably two or three men handle two-thirds of the whole crop. They buy the apples in the orchard, sort, grade and pack them and they have been doing the best of this trade, and it is largely due to their care in handling and packing them that the Nova Scotia apples have done so well, and have brought them so much profit in the European market. I have a letter here from Messrs. Watson & Phillip, which Mr. Murray, our immigration agent in Glasgow, has forwarded to me and I will read it for the information of the committee as it is strongly in confirmation of what has been said by Prof. Robertson and Mr. Grindley upon the question of packing. The letter which Mr. Murray incloses is from one of the largest firms of importers in Dundee, and it is as follows :—

"We regret to say we have found grave cause for complaint in regard to the quality of the shipment of Canadian apples. The fault consists of dishonest packing the apples at the top and at the bottom of the barrel being far better than the bulk of the fruit within the cask. This has been very noticeable this year, more so than ever before in our experience and so grave as to cause almost a deliberate swindle."

He goes on then to suggest Government inspection and stamping, but he points out the difficulties to which I have alluded.

"Of course this will entail the examination of each parcel of fruit and one barrel probably out of 50 would require to be opened and turned out and on such examined barrels there would be a reduction in value no doubt but in the interests of honest packers in America who are prevented from getting the proper value of the goods owing to the general depreciation caused by this dishonest method as well as in the interests of receivers here, there is claimant need for such supervision and official stamping. Second quality of fruit of course would bear secondary brand third quality the brand indicating that the barrels consisted of this grade.

Roberts

"We recommend this to your earnest attention and we are bound to say if you inquire of the trade generally in Glasgow you will find that this is the opinion in general throughout British importers. Signed, Watson & Phillip."

These complaints are rather intensifying than decreasing, and in this last season when there was no tremendous crop and consequently no great rush on the part of the packers when they might perfectly well have dealt with their fruit honestly and properly, it seems to have been worse than ever before, and I felt it is important that these facts should be shown and ventilated here and published at large, and the people who are particularly concerned in the trade at large should be informed of it.

Mr. McMILLAN.—I don't know of a single farmer that has shipped apples for a number of years in our district, but the apples are all picked by the farmers themselves, put in heaps in the orchard, and the buyers buy them and send their men around to pack them.

Hon. Mr. FISHER.—That is the system adopted in the Annapolis Valley.

Mr. McMILLAN.—I am against leaving the apples in the field. We pull all the apples, put them into the barrels and take them into the shed, put straw around them and leave them and they lay there for a week or ten days before being packed. But those apples that are left out in the sun are injured. They are not only damaged because of the sun but there is a little worm that gets into them if they are left out in the air very long.

Having examined the preceding transcript of my own evidence I find it correct.

JAS. W. ROBERTSON,
Commissioner of Agriculture and Dairying.